

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the Application of:
ROBERT JOSEPH STATZ
APPLICATION NO.: 09/558,849
FILED: April 27, 2000
FOR: HIGHLY-NEUTRALIZED
ETHYLENE COPOLYMERS

CASE NO.: AD6731 US NA
GROUP ART UNIT: 1712
EXAMINER: D. BUTTNER

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DECLARATION UNDER 37 C.F.R. § 1.132

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Sir:

I, John C. Chen, declare that:

I am a citizen of the United States of America and reside at 21 Kent
Drive Hockessin, Delaware, 19707;

I am an employee of E.I. du Pont de Nemours and Company;

I received a Doctor of Philosophy Degree in Polymer Science from the
University of Akron in 1981;

I have worked for DuPont from 1981 to the present in research and
development and for the past 12 years have worked in the field of polymers for
packaging and industrial products and in particular in the field of polymers used
in the fabrication of golf balls;

I am familiar with the office action of April 17, 2002 in the subject
application and with the references cited therein.

The following experiments were carried out under my supervision:

EXPERIMENT No. 1

Table 4 of Sullivan US 5,902,855 shows that Nucrel® 035 was 100%
neutralized with magnesium cation. Nucrel® 035 is an ethylene copolymer
made by DuPont and is comprised of E/10% iBA/ 10% MAA where E is
ethylene, iBA is isobutyl acrylate, MAA is methacrylic acid and has a melt index
of 35.

A pellet blend of E/10% iBA/ 10% MAA having a melt index of 35 and $\text{Mg}(\text{OH})_2$ concentrate at 50% loading (in a 100:6.91 weight ratio) was charged into a Werner & Pfleiderer twin screw melt extruder having the following temperatures in the zones of the extruder :95/120/260/260/260/260 °C in the presence of added water. The blend was passed through the extruder twice to ensure a high level of neutralization. During the second pass through the extruder, the torque of the extruder rose to such a high level that it exceeded the extruders limit and the extruder shut down. A strand of the polymer was recovered from the extruder and analyzed by an infra red spectrometer, which showed that the degree of neutralization was about 93%.

From the above, I concluded that a 100% neutralized counter part of the polymer is not melt processible in a conventional continuous melt process extruder to enable the addition and mixing of an additive, such as, magnesium stearate to an ionomer resin composition useful in the formation of golf balls.

In the Examples of the subject application, ethylene/butyl acrylate/acrylic acid or methacrylic acid copolymers were simultaneously mixed and neutralized with stearic acid and magnesium stearate and the compositions were melt processible and further fabricated, for example, into golf ball covers, using a conventional continuous melt process.

EXPERIMENT No. 2

Sullivan '855 states that metal stearates can be added to the ionic polymer composition "as long as the desired properties produce by the golf ball covers of the invention are not impaired" (see col. 5, lines 22-23). The following ionomers were prepared and formulated into golf ball covers and tested for scuff resistance:

<u>Ionomer Resin Golf Ball Cover</u>	<u>Scuff Resistance Rating</u>
SEP1092-14	2
SEP 1092-16 + 30% Magnesium Stearate neut. 100% $\text{Mg}(\text{OH})_2$	3-4
SEP 1092 -16 + 40% Magnesium Stearate neut. 100% $\text{Mg}(\text{OH})_2$	4
SEP 1092 -16 + 45% Magnesium Stearate neut. 100% $\text{Mg}(\text{OH})_2$	4-5

Where

SEP 1092-14 is an ionomer resin of (E/9%MAA/23.5%NBA) and neutralized by $\text{Mg}(\text{OH})_2$ to 50% neutralization.

SEP 1092-16 is an ionomer resin of (E/9%MAA/23.5%NBA) and neutralized by $\text{Mg}(\text{OH})_2$ to 70% neutralization.

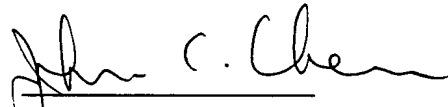
E = ethylene NBA = normal butyl acrylate MAA = methacrylic acid

MG=magnesium

Scuff Resistance Rating Scale: 0 to 5 where 0 is best.

I concluded from the above data and the teachings of Sullivan '855 that one skilled in the art would not add magnesium stearate to the ionomer resin since it reduces scuff resistance which is one of the properties that Sullivan '855 is directed to improve.

I further declare that all statements made herein are of my own knowledge and are true and that all statements made on information and belief are believed to be true and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both under Section 1001 of title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.



John C. Chen

Dated: Aug. 9, 2002